Claims:

1. Objective designed as a microlithography projection objective for an operating wavelength,

- having a greatest adjustable image-side numerical aperture NA,
- having at least one first lens made from a solid transparent body, in particular glass or crystal, with a refractive index n_L,
- having at least one liquid lens (F) made from a transparent liquid, with a refractive index n_F,

wherein at the operating wavelength

- the first lens has the greatest refractive index n_L of all solid lenses of the objective,
- the refractive index n_F of the at least one liquid lens (F) is bigger than the refractive index n_L of the first lens
- and the value of the numerical aperture NA is bigger than 1.

2. Objective according to Claim 1, characterized in that at the operating wavelength the refractive indices n_F and n_L and the numerical aperture NA are related to each other according to $n_F > NA > n_L$.

3. Objective according to at least one of the preceding claims, characterized in that at the operating wavelength the numerical aperture $NA \geq 1.4$.

4. Objective according to at least one of the preceding claims, characterized in that the at least one liquid lens (F) is the last curved optical element on the image side.

5. Objective according to at least one of the preceding claims, characterized in that a plane-parallel plate (EP) is arranged between the at least one liquid lens (F) and the image plane (IM) of the objective.

6. Objective according to Claim 5, characterized in that at the operating wavelength the refractive index n_{EP} of the plane-parallel plate (EP) is greater than the refractive index n_F of the at least one liquid lens (F), in particular in that the plane-parallel plate consists of sapphire.

7. Objective according to at least one of the preceding claims, characterized in that the at least one liquid lens (F) is essentially hemispherical and, in particular, has a thickness on the optical axis of the objective that is 80 to 110% of the radius of its curved surface.

8. Objective according to at least one of the preceding claims, characterized in that it exhibits one or two intermediate images (IM1, IM2).

9. Objective according to at least one of the preceding claims, characterized in that it is catadioptric.

10. Objective according to at least one of the preceding claims, characterized in that it comprises an image-side objective part arranged at the image-side end of the objective and being refractive.

11. Objective according to Claim 10, characterized in that the pupil (P) of the image-side objective part is arranged between a lens at which the traversing light bundle is of greatest diameter and the image plane (IM).

12. Objective according to at least one of the preceding claims, characterized in that a number of meniscus lenses of positive refractive power, which have a concave shape on the image side, are preceding the at least one liquid lens (F).

13. Objective according to at least one of the preceding claims, characterized in that a stop-down system aperture is arranged in an object-side objective part, which is located at the object-side end of the objective.

14. Objective according to at least one of the preceding claims, characterized in that at the operating wavelength the refractive index n_F of the at least one liquid lens (F) is bigger than 1.4, preferably equal to or bigger than 1.6.

15. Objective according to at least one of the preceding claims, characterized in that it is a catadioptric objective for which all refracting or reflecting surfaces are rotationally symmetrical in relation to a common axis.

16. Objective according to at least one of the preceding claims, characterized in that it is a catadioptric objective and all the mirrors are curved.

17. Objective according to at least one of the preceding claims, characterized in that it comprises a catoptric or catadioptric objective part.

18. Objective according to at least one of the preceding claims, characterized in that it comprises a catadioptric objective part with a concave mirror and a negative lens.

19. Objective according to at least one of the preceding claims, characterized in that it is an immersion objective.

20. Objective according to at least one of the preceding claims, characterized in that at least one liquid lens (F) touches the image plane (IM) and an object, if the object is arranged in the image plane in order to be exposed.

21. Objective according to at least one of the preceding claims, characterized in that it includes an object-side last element made from a transparent solid body, in particular a plane-parallel plate (EP) according to Claim 5 or 6, and in that a transparent medium with a refractive index $n_I > 1.1$ at the operating wavelength is arranged between this element and an object in the region of the image plane (IM).

22. Objective according to Claim 21, characterized in that at the operating wavelength it holds that $n_I = n_F$.

23. Objective according to Claim 21 or Claim 22, characterized in that at the operating wavelength it holds that $n_I \geq n_L$.

24. Objective according to at least one of the preceding claims, characterized in that a material of the first lens or further lenses is a material from the group of fused silica and fluoride monocrystals comprising CaF_2, BaF_2, SrF_2, LiF, NaF.